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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte CARL W. MERCIER, DANIEL E. QUINN, DAVID J. HISKES, PAUL M. PELLET, and MICHAEL L. MILLER

Appeal 2015-002086
Application 12/417,714
Technology Center 3700

Before ANNETTE R. REIMERS, ERIC C. JESCHKE, and GORDON D. KINDER, *Administrative Patent Judges*.

REIMERS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Carl W. Mercier et al. (Appellants) appeal under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 10–14 and 20 under 35 U.S.C. § 103(a) as unpatentable over Andrews (US 3,981,786; iss. Sept. 21, 1976) and Dansereau (US 6,106,204; iss. Aug. 22, 2000). Claims 1–9 and 15–19 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

CLAIMED SUBJECT MATTER

The claimed subject matter relates to an electrode discharge machining (EDM) apparatus "having a fixture for securing a workpiece that may be a blade of a gas turbine engine." Spec., para. 1, Figs. 1, 5A, 5B.

Claim 10, the sole independent claim on appeal, is representative of the claimed subject matter and recites:

> 10. An electric discharge machining (EDM) apparatus for machining a workpiece, the EDM apparatus comprising:
>
> an EDM head;
>
> an electrode holder;
>
> an electrode for creating a trailing edge profile of the workpiece, the electrode shaped to a trailing edge profile specification for the trailing edge profile of an airfoil; and
>
> a fixture comprising at least one locator that relates to a platform datum of the workpiece, and at least one locator that relates to a leading edge datum of the airfoil of the workpiece, wherein the fixture is configured to secure the workpiece with respect to the EDM head so that a chord length of the airfoil is maximized, and wherein the fixture does not contact the trailing edge of the airfoil.

ANALYSIS

Independent claim 10 calls for, in relevant part, "an electrode for creating a trailing edge profile of the workpiece, the electrode shaped to a trailing edge profile specification for the trailing edge profile of an airfoil." Appeal Br. 10, Claims App. The Examiner finds that Andrews discloses this limitation. *See* Final Act. 2. In particular, the Examiner finds that Andrews discloses "an electrode 4 for creating a trailing edge profile of the work piece 2, the electrode 4 shaped to a trailing edge profile specification for the

trailing edge profile of an airfoil." *Id.* (citing Andrews, 2:62–3:17, 3:29–38; Figs. 1–3, 6).[1] The Examiner further finds:

> Andrews does teach of drilling holes into the turbine vane trailing edge 18. . . . The [E]xaminer considers the "profile" of Andrews's workpiece to be contour of the trailing edge with or without holes. Since Andrews teaches of a turbine vane with a trailing edge profile starting without holes, a plurality of electrodes with the contour or profile of the turbine van[e] trailing edge, and of a turbine vane trailing edge profile with holes drilled by the plurality of electrodes, it would be obvious to one of ordinary skill in the art at the time of [Appellants'] invention that the trailing edge profile with holes meets the Merriam-Webster definition of "a representation of something in outline; an outline seen or represented in sharp relief: contour" of the workpiece that has holes. Therefore[,] Andrews does meet the recited language of claim 10 disclosing "an electrode for creating a trailing edge profile of the workpiece, the electrode shaped to a trailing edge profile specification for the trailing edge profile of the airfoil[."]

Ans. 5–6.

Appellants contend that "Andrews does not disclose the creation of a trailing edge profile, but rather discloses drilling holes in a trailing edge profile that has been previously created." Appeal Br. 5–6. According to Appellants, "[i]n Andrews, the trailing edge already exists, and holes are being drilled therein. . . . [T]he electrodes in Andrews are all shaped to drill holes, and not to [create] a trailing edge profile." *Id.* at 6.

Appellants further contend that "[o]ne of skill in the art would recognize that the 'trailing edge profile' is that which is consistent with the drawings and contextual reading of the specification." Reply Br. 3. In

[1] The Examiner relies on Dansereau for disclosure of at least one locator that relates to a platform datum and a leading edge datum of the work piece. *See* Final Act. 3–4.

particular, Appellants contend that "[a]s illustrated in FIG. 5A [of the subject invention], the trailing edge profile is the outline of the trailing edge [24] that extends between the shroud 16 and platform 14" and "similarly, the working profile 62 is illustrated in FIG. 5B [of the subject invention] as extending between the shroud 16 and platform 14." *Id.* at 2; *see also* Spec., para. 28.[2] Appellants conclude that upon review of Appellants' Specification and drawings "one of skill would realize that the profile 62 relates to the trailing edge defined as the profile between the shroud and platform." Reply Br. 2.

We acknowledge that Appellants' Specification does not explicitly define the term "trailing edge profile." *See* Final Act. 2, 9; *see also* Ans. 2–6. However, as correctly pointed out by Appellants, the Specification describes that "[w]hen workpiece 10 is a turbine vane singlet or blade, electrode 34 has a working profile 62 that *mirrors* the trailing edge profile of workpiece 10." Spec., para. 28 (emphasis added); *see also* Reply Br. 2. We agree with Appellants that upon review of the Specification and Figures 5A and 5B of the subject invention, "one of skill [in the art] would realize that the profile 62 relates to the trailing edge [24 of airfoil 12] defined as the profile between the shroud [16] and platform [14]." Reply Br. 2.

Additionally, we note that the Specification differentiates between creating a "trailing edge profile" of a workpiece and creating "trailing edge apertures" – i.e., holes – in the trailing edge of the airfoil. In particular, the Specification describes: (1) "By controlling movement of electrode 34 relative to workpiece 10, EDM apparatus 30 can produce many desired

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[2] Appellants cite to paragraph 29 of the Specification. *See* Reply Br. 2. We consider this a typographical error.

features, *such as notches, apertures and profiles*" (Spec., para. 23 (emphasis added)); (2) "In alternate examples, the electrode may be a comb type design, that is, contain surfaces for creating the working profile 62 [of a workpiece] *as well as projections for creating cooling apertures* in trailing edge 24 of the airfoil 12" (Spec., para. 28 (emphasis added); *see also* Ans. 5); and (3) "In other examples, electrode 34 may take a varying, non-linear path during the machining operation, such as when *creating both* trailing edge apertures [in the trailing edge of the airfoil] and the trailing edge profile of a workpiece" (Spec., para. 29 (emphasis added)). Thus, according to Appellants' Specification, creating cooling apertures (i.e., holes) in the trailing edge of the airfoil is different than creating a trailing edge profile of a workpiece. *See* Appeal Br. 5–6

Andrews discloses that "[t]he workpiece **2** is shown, by way of example, as a hollow turbine vane with a trailing edge **18** *into which the plurality of holes are to be drilled*." Andrews, 2:7–9 (emphasis added), Fig. 1; *see also id.*, Title ("ECM AND EDM TOOLING FOR PRODUCING HOLES IN AIRFOIL TRAILING EDGES" (emphasis omitted)). In other words, Andrews discusses creating cooling apertures (i.e., holes) in trailing edge 18 of the airfoil, which, according to Appellants' Specification, is not the same as creating a trailing edge profile of a workpiece. *See* Andrews, 1:1–40, 2:7–9; *see also* Spec., paras. 23, 28, 29; Appeal Br. 5–6. Because creating cooling apertures (i.e., holes) in the trailing edge of the airfoil is different than creating a trailing edge profile of a workpiece, we disagree with the Examiner's interpretation that "the trailing edge profile with holes" (i.e., "a turbine vane trailing edge profile with holes drilled by the plurality of electrodes") of Andrews "meet[s] the recited language of claim 10

disclosing 'an electrode for creating a trailing edge profile of the workpiece.'" *See* Ans. 5–6; *see also* Final Act. 9; Spec., paras. 23, 28, 29; Appeal Br. 5–6; *id.* at 10, Claims App. Consequently, the Examiner fails to establish by a preponderance of the evidence that Andrews discloses an electrode for creating a trailing edge profile of the workpiece, as required by claim 10.

Accordingly, for the foregoing reasons, we do not sustain the Examiner's rejection of independent claim 10 and its dependent claims 11–14 and 20 as unpatentable over Andrews and Dansereau.

DECISION

We REVERSE the decision of the Examiner to reject claims 10–14 and 20 as unpatentable over Andrews and Dansereau.

REVERSED